



Striking a Balance Between Energy and the Environment in the Columbia River Basin

The Impact of Population Growth on Fish and Wildlife



When civilization and the environment collide, it's often the environment that suffers. A recent report by a panel of independent scientists underlined this message and urged greater attention to population growth in fish and wildlife planning.

Central Oregon is one example of this trend. It's the fastest growing area in the state; its population has increased 20 percent in the last five years, and Bend, its largest city, was recently identified as the sixth fastest growing metropolitan area in the nation. The report notes that while growth has increased in and around urban areas in the basin, the rapid growth

People and Fish and Wildlife

The impact of human activities on the environment began as early as the 19th century with intensive beaver trapping, and continued with the expansion of industries, the development of towns and cities, and dam building. The effect of all these changes has meant, among other things, the elimination of wetlands, reduced river flows, and degraded water quality. Habitat for fish and wildlife has been diminished and lost.

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According to the report, **Human Population Impacts on Columbia River Basin Fish and Wildlife**, the West is the fastest growing region of the United States, and the population of Oregon, Washington, Idaho, and British Columbia is projected to continue to grow at least until 2030. Most people in the basin live west of the Cascade Mountains along the I-5 corridor, a pattern that has persisted from 1970 to 2000 and is expected to continue through 2010 and 2020. But significantly, more and more people are moving to formerly undeveloped scenic areas that offer a wide variety of recreational activities

in the interior and rural areas of the basin—in central Oregon, central Washington, and Idaho—has the most serious implications for fish and wildlife. This is because, according to the report, "...even small numbers of people moving into a low population density area will make a relatively large rate of change." The challenge for regional planners is clear, since projections for the next 20 years predict increasing growth throughout the basin, with even greater shifts into the interior of the basin and rural areas.

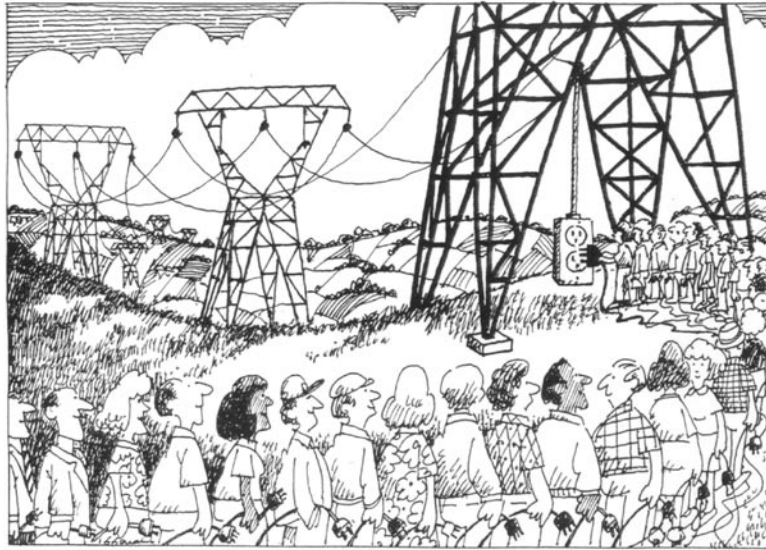
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Northwest Power Supply Is Adequate, but Potentially Expensive, Assessment Shows

Despite the recent hot weather and corresponding high demand for electricity, the Pacific Northwest is unlikely to face an electricity shortage this summer or for the next five years, according to an assessment by the Northwest Power and Conservation Council. However, while the power supply is adequate, it may not always be inexpensive. Northwest utilities currently are investing in new resources, especially conservation and renewable energy, and those investments will need to continue to ensure that power remains reliable and affordable in the future.

The assessment shows that while the available supply exceeds anticipated demand for power, and will through at least 2012, much of that surplus is not



committed to utilities and exists in the wholesale marketplace where prices can be highly volatile and power is sold to the highest bidder. In short, there is a surplus of electricity but prices could be high, particularly during short-term periods of high demand, as during extremes of weather—hot or cold.

advance to address before they become emergencies. The assessment is intended as information only and has no force of law.

“The Council’s 2010 and 2012 adequacy assessments indicate that electricity resources available to the Northwest are

The assessment is the first to use new benchmarks for electricity system adequacy and reliability that were developed collaboratively by the Council, Bonneville Power Administration, electric utilities, state energy agencies, utility associations in the region, and the Northwest Energy Coalition. The assessment looks three and five years into the future so that potential power supply problems are evident far enough in

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Notes From the Chair

As a planning agency, the Northwest Power and Conservation Council strives to forecast, as accurately as possible, what the future has in store for us. One of the clearest predictions is for continuing numbers of people moving into the Columbia River Basin. A recent report by the Independent Scientific Review Board noted that projections of population growth rates for the interior basin range from 0.3 percent to 1.6 percent per year through 2040. The numbers alone would be cause enough for concern, but it is also where and how people are choosing to live; increasingly, in semi-rural, low-density land that is near forests. The implications from both an energy and fish and wildlife standpoint are obvious, and are outlined, along with recommendations to address the challenges of increasing growth, in a story in this issue.

Also in keeping with the theme of looking forward are stories on the Council’s assessment of the region’s power supply and innovative fish and wildlife projects. Developed in collaboration with many other energy stakeholders, the assessment will give energy planners advanced warning of power supply concerns in time to address them, and the innovative projects submitted for funding highlight the latest research on fish and wildlife protection and restoration strategies. And, in an interview with Columbia Basin Fish and Wildlife Authority Executive Director Brian Lipscomb, he underscores the connection between our daily actions and choices, as much as anything else, to fish and wildlife health.

In a recent essay in the New York Times on California’s projected two-thirds increase in population by 2050, contributing editor Verlyn Klinkenborg observed that “The point of thinking about the future is to help us think about the present.” The idea is that our future is shaped by the actions we take today; the present and the future are related as cause and effect. It’s a relationship worth bearing in mind as we prepare for, and seek to secure, the future.

Innovative Projects Would Test New Methods of Enhancing Fish and Wildlife Habitat and Survival

New ideas for how to remove contaminants from polluted river sediments and deter salmon-eating marine mammals at the face of Bonneville Dam are among the highest-rated proposals for innovative projects to improve fish and wildlife survival in the Columbia River Basin.

The Northwest Power and Conservation Council solicited proposals earlier this year for new projects that would test innovative techniques. The Council received 59 project proposals and then turned them over to the Independent Scientific Review Panel (ISRP), which reported to the Council in June. The Council will decide in September which projects to recommend to the Bonneville Power Administration for funding for two years, beginning in Fiscal Year 2008, which begins on October 1 of this year. Bonneville set aside a total of \$2 million to fund innovative projects during the two-year period. The 59 project proposals seek a total of \$16.2 million.

To qualify as innovative, projects must meet the following criteria:

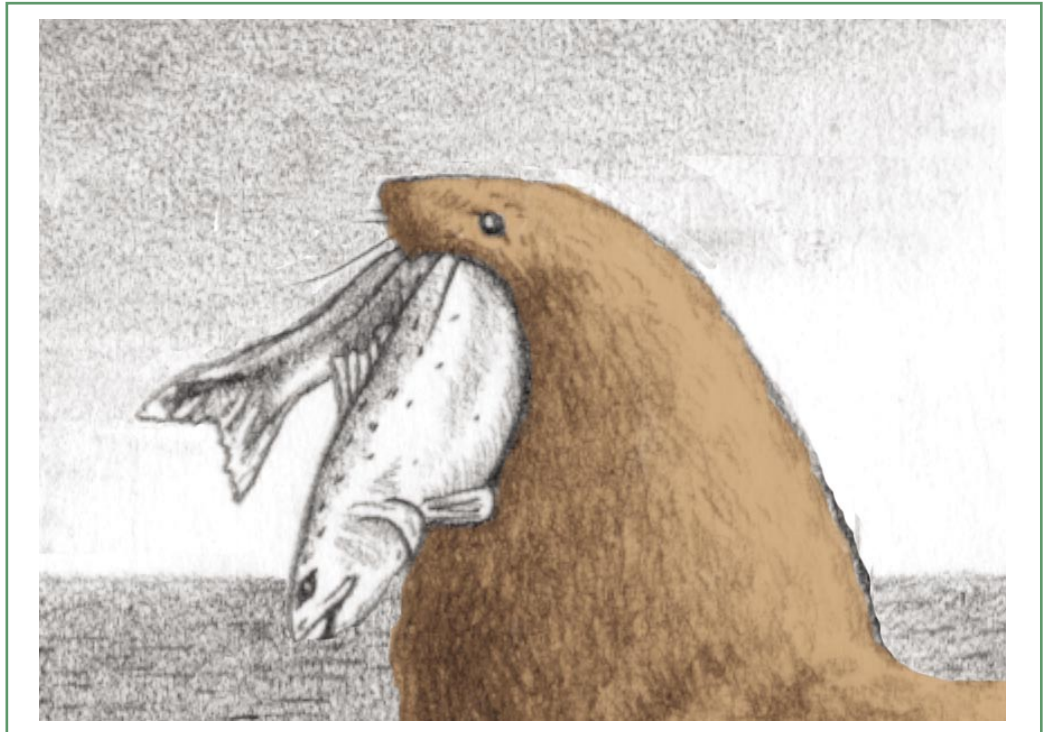
- Offer a method or technology designed to directly benefit fish and wildlife, that (1) has not previously been used in Columbia River Basin fish and wildlife projects or (2) if used before in other projects, has not been used in the proposed application
- Be an innovative on-the-ground “demonstration” or “pilot” project with a focus on testing or demonstrating new methods or technologies
- Contribute, if successful, to direct improvements in the survival or productivity of Columbia River fish or wildlife species. (Investigations of basic biological

and physical phenomenon are not targeted with this solicitation.)

- Be consistent with the Council’s Fish and Wildlife Program

sponsors:

- Integrated Non-Lethal Electric Barrier and Sonar System to Deter Marine Mammal Predation on Fish in the Colum-



- Address key management questions or limiting factors identified in the program’s subbasin plans or mainstem amendments
- Be feasible to complete within 18 months, including one year to implement the work and six months to complete reports and other deliverables as appropriate
- Meet the ISRP’s project review criteria in the Northwest Power Act.

The ISRP, which reviews all projects proposed for funding through the Council’s Columbia River Basin Fish and Wildlife Program, reported that nine of the proposed projects met all of the criteria. Here is a brief review of those projects, with information provided by the project

Columbia River System: A Demonstration Project. Short description: This proposal would develop and evaluate a passive, integrated electric barrier and sonar array that selectively inhibits upstream marine mammal movements and predation on fish, without injuring pinnipeds or affecting anadromous fish migrations. Sponsor: Smith-Root, Inc.

Eelgrass enhancement and restoration in the Columbia River Estuary through innovative site selection and planting techniques. Short description: Strong flows in the Columbia River likely limit the success of eelgrass seed dispersal and new plant establishment. Applicants propose using innovative site selection techniques to identify 5-10 areas suitable for eelgrass enhancement, plant, and monitor success. Sponsor: *(continued on page 4)*

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Pacific Northwest National Laboratory

- **Enhancing Summer Instream Flow and Reducing Temperature in Agricultural Watersheds.** Short description: This project proposes to explore groundwater recharge via direct seeding (no-till). The approach is not new, but the research into effectiveness and use of no-till as a method to increase summer flows has not been adequately demonstrated. Sponsor: Washington State University

- **What was old is new again: evaluate traditional gears for selective harvest.** Short description: Three traditional fishing gears will be evaluated for the selective harvest of fall Chinook and coho salmon: beach seine, pound net, and fishwheel. The sponsors will coordinate this work with an advisory group so that socio-economic aspects are addressed. Sponsor: Washington Department of Fish and Wildlife

- **Physical and Biological Field Testing of a Flow Velocity Enhancement System.** Short description: The proponent's


patented flow-enhancement system provides migration cues using mechanically generated turbulent-flow fields. Field testing would evaluate the effectiveness of induced flow for enhancing and guiding smolt migration, which is important for developing efficient bypasses at dams and other obstructions. Sponsor: Natural Solutions

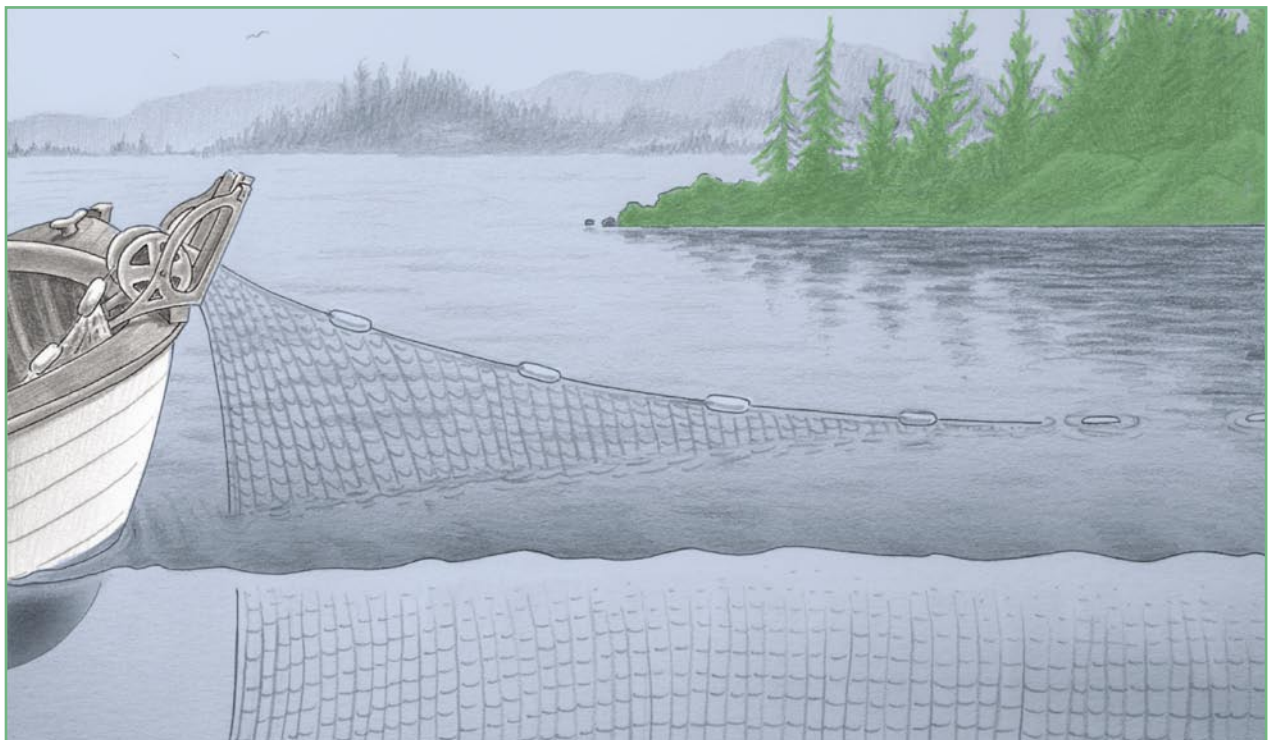
- **Lake oxygenation pilot study: Improving Redband Trout habitat quality in Twin Lakes, Washington.** Short description: This project would evaluate the efficacy of lake oxygenation to improve summer-time habitat for native redband trout in Twin Lakes, Washington, by enhancing dissolved oxygen levels in bottom waters. Sponsor: Washington State University

- **Improving Fish Habitat Using Innovative Strategies to Remediate Contaminated Sediments in the Columbia River Basin.** Short description: Contaminated sediments represent a critical environmental problem that impairs aquatic ecosystems. The purpose of this proposal is to demonstrate an innovative cleanup strategy

designed to treat toxic sediments to improve fish habitat. Sponsor: Washington State University

- **Evaluation of artificial upwelling to enhance lower Columbia River Gorge chum salmon spawning.** Short description: Evaluate efficacy of using artificial hyporheic upwelling to enhance chum salmon spawning habitat. Sponsor: Pacific Northwest National Laboratory

- **Shad for Nutrient Enhancement— Demonstration of Fishery Supply, Disease Evaluation, Product Type and Potential Use.** Short description: A pilot project to evaluate the efficacy of using the abundant Columbia River shad run as a resource for stream nutrient enhancement throughout the basin. Potential would be evaluated by four criteria: availability, disease risk, fish product, and demand. Sponsor: Washington Department of Fish and Wildlife. 



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adequate," said Council Chair Tom Karier. "The assessment provides a high assurance that the Northwest will avoid blackouts due to an inadequate overall power supply for the next three to five years. This is good news, but it does not ensure that the region will avoid periods of high prices, nor does it ensure that individual utilities have control over enough electricity through contracts with power suppliers or from their own power plants to meet their customers' needs."

So what should utilities do in the face of a surplus, but also facing the potential for high prices?

Karier said the answer is in the Fifth Northwest Power Plan, which the Council issued in late 2004. The plan directs Bonneville's acquisitions of power and conservation to meet future demand, and it also serves as a kind of blueprint for utilities in the region to aid their own planning. In addition, most utilities have integrated resource plans that direct their investments in power supply and conservation. The Council's power plan calls for continuing aggressive efforts to develop energy conservation and renewable resources. Karier said those efforts remain crucial to ensuring the region of an adequate, efficient, economic, and reliable power supply. Karier also noted that many of the region's utilities are working hard to capture conservation opportunities and to acquire generating resources, as required by their integrated resource plans and by state renewable-energy portfolio standards.

"The Council's assessment reinforces the need to continue these efforts so that utilities achieve an appropriate balance between power they buy through long-term contracts at stable prices and power they buy through short-term contracts on the wholesale market, when necessary," Karier said. "This will minimize expenditures over time and also minimize environmental risks, such as the risk of increased emissions from older, dirtier power plants that run mainly when demand for power peaks."

Despite the regional electricity surplus, it remains important to continue developing new power generating and conservation resources.

The Council's assessment is based on a non-binding resource adequacy standard for the Northwest. The standard was developed in 2006 by the Resource Adequacy Forum, which included representatives from the states, government agencies, and electric utilities, and interest groups. The standard is designed to assess the power supply's capability of providing service when needed both on an annual basis and on an hour-to-hour basis. Thus, the standard has both an energy target (long-term service) and a capacity target (hourly service).

The regional resource adequacy standard consists of a metric and a target for both annual capability (energy) and the peaking capability (capacity) of the system. The targets for both the energy and capacity metrics are derived from a loss-of-load-probability (LOLP) analysis. Using a computer program, the operation of the power supply is simulated over a large number of possible futures in which water conditions, temperatures, and availability of electricity from thermal power plants are selected at random. For each simulated future, the program dispatches available resources to meet demands and notes when insufficiencies occur.

The Council uses an LOLP of 5 percent as the threshold to determine the energy and capacity targets. In other words, if the power supply were precisely at the standard's target levels, the likelihood

of the region experiencing a future year with a significant curtailment would be 5 percent, which is the same as once in 20 years. The energy standard requires that the annual generating capability of the system at least equal the annual average load. On the resource side of this equation, nearly 4,000 average megawatts of non-firm resources (out-of-region and in-region spot markets and non-firm hydro-power) are included.

Using these assumptions, the Council's assessment shows that the current estimated load/resource balance is 4,260 average megawatts for 2010 and 4,050 average megawatts for 2012. The capacity standard requires that the generating capability of the system during the peak load hours have sufficient surplus—reserve margin—expressed as a percentage of the total generating capability to cover operating reserves, increases in load due to high or low temperatures, and other contingencies. The winter reserve margin target is 25 percent and the summer target is 19 percent. Current estimates for winter reserve margins are 48 percent and 46 percent for 2010 and 2012 respectively. Summer estimates are 32 percent and 30 percent. All are well above the targets.

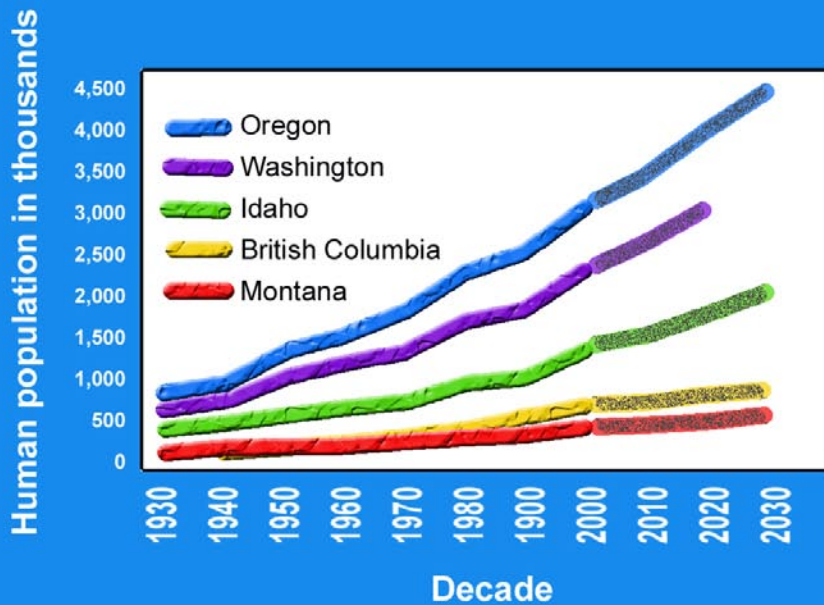
While it is good news that the Northwest has an electricity surplus of more than 4,000 average megawatts over the next five years—more than enough to power three cities the size of Seattle for that time period—the assessment also makes clear that much of that surplus is

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Did you know?

The average cost of conservation is about 1/2 the cost of new generating resources.

Trends and Projections in Columbia River Basin Human Population Size, 1930-2030 by Decade



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Over the years, efforts to address and mitigate the effects of human activities on fish and wildlife in the basin have been undertaken by federal and state agencies, and through the Council’s fish and wildlife program. However, the effect of population growth is rarely incorporated into fish and wildlife planning. As the report notes in its introduction, “The [Council’s] Fish and Wildlife Program implicitly assumes a level base case of human development as do most fish and wildlife planning processes, including the Biological Opinion for the Federal Columbia River Power System.” What the report illuminates is how new trends in population growth threaten to undermine this work: “These trends have unevenly distributed impacts throughout the basin with direct implications for fish and wildlife conservation, mitigation, and recovery.”

New Patterns of Population Distribution

How much growth is expected in the basin? Although there is a wide range of

estimates—from 40 to 100 million people by the end of the 21st century—projected population growth rates for the interior Columbia River Basin range from 0.3 percent to 1.6 percent per year up to 2040.

Quarterly Quote

**“The past is not dead.
In fact,
it’s not even past.”**

William Faulkner

One study concluded that if the largely migration-driven population growth continues unabated, it would result in a three to sevenfold increase in the population in the basin.

More and more, forests and agricultural lands are being converted to residential and commercial development. With a growing demand for housing, property values increase, creating a greater

incentive to sell. The trend in forest land conversion in western Washington accelerated during the 1990s, especially along the I-5 corridor. Comparable development on forest land is also occurring in Oregon, especially in the Willamette Valley.

The loss of agricultural land is also attributed to the growing demand for land. In the U.S., the number of farms has been in steady decline since 1950; from 5 million to fewer than 2 million today. The agricultural conditions in Oregon illustrate many key trends in the region as a whole. Agricultural land is being converted to nonagricultural uses, and a major factor in this is increasing land prices driven by population growth. According to 1000 Friends of Oregon, the state loses about 870 acres of agricultural land each year to urban expansion, and about 700 acres to rural development of rezoned agricultural land outside of urban growth boundaries. But by far the largest conversion of agricultural land—15,000 acres per year—is

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attributable to “ranchette” rural homes and vacation homes on farm and ranch lands, creating “rural sprawl” that often takes land out of production and fragments the agricultural land base.

This trend is also called “exurban development.” Exurban development, or low-density home development, notes the report, “...has become the fastest-growing form of land use since 1950, and has become the dominant trend in human settlement in the Western United States since 1970.” Typically, an exurban area is semi-rural and beyond the suburbs of a city, characterized by large lot development—about five acres or more per house.

In 1950, less than 1 percent of the land area of the United States was at urban density, and around 5 percent at exurban. In 2000, the ratio was 2 percent urban and a startling 25 percent for exurban—a dramatic increase in exurban development. Additionally, this growth was disproportionately outside of existing metropolitan counties, and it was especially high in the West, including part of the Columbia River Basin.

And the rate of exurban growth appears to be increasing. One study forecasts urban and suburban housing densities to expand by 2.2 percent by 2020, but exurban development to expand by 14.3 percent. The report notes that, “the proportion of homes built in areas of productive soils and proximity to water has remained consistently high, and this trend is likely to continue if not constrained by public policy.” The cost of this development—in areas so critical to fish and wildlife—can be severe: “Data suggest that exurban development typically has led to decreased species diversity, decreased abundance, and local extirpation of some species, especially larger and more specialized species...”

In the quest for one’s own piece of paradise, it can become paradise lost in the process of rapid urbanization.

“...even small numbers of people moving into a low population density area will make a relatively large rate of change.”

Human Population Impacts on Columbia River Basin Fish and Wildlife


But if growth is inevitable, how should we address the impacts of human development on the basin’s ecosystems? The report emphasizes a number of strategies and tools. First and foremost is to incorporate population growth in fish and wildlife recovery planning: “Fish and wildlife recovery plans that include human population projections are more likely to promote measures that buffer Columbia Basin ecosystems from intensified patterns of land and water use.” The report identifies four elements necessary to incorporating changes in human population into land use planning to protect fish and wildlife: 1) stakeholder involvement; 2) explicit spatial modeling of critical resources (habitat, species, water quality and quantity) and development patterns to provide a scientific basis for decision-making; 3) investigation of alternative development scenarios; and 4) evaluation and monitoring to enable adaptive management.

“These elements can be employed at any level of planning: county green space, subbasin or state,” says Dr. Susan Hanna, a professor of agriculture and resource economics at Oregon State University and contributor to the report.

The Council’s fish and wildlife program currently funds a variety of conservation and restoration practices to “build from strength, create wild salmon refuges, and protect habitat that supports diverse fish

and wildlife populations.” Through the program’s subbasin plans—local plans that prioritize fish and wildlife projects—the region can address population growth and devise strategies to protect the environment and mitigate the effects of urban development on natural resources.

Examples of tools to address population growth on the environment include: Establishing permanently protected refuge areas or “strongholds” to minimize interactions between salmon and human activities; promoting efforts to reduce the loss of ranchland, farmland, and forestland; providing incentives to private landowners to protect fish and wildlife habitat; and providing incentives to communities, counties, and subbasins to plan for sustainable groundwater and surface water.

By encouraging the involvement of ranchers, environmentalists, and policymakers, and coordinating with other authorities to promote comprehensive and sustainable water use policies, it is possible to grow without sacrificing the qualities we most treasure about the Pacific Northwest. 

Energy Efficiency Tip


Replace incandescent light bulbs with compact fluorescent bulbs.



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controlled by independent power producers. These suppliers will sell their power on the wholesale market to the highest bidder, including utilities outside the Northwest. Thus, the full amount of the surplus may not always be available to Northwest utilities. Some of this independent power already is committed to utilities under contract, including utilities in the Northwest, and the rest is not. Nonetheless, the Council believes that a reasonable amount of uncommitted power will be available during periods of high demand, but at a potentially high price.

The Council's assessment, which will be issued annually, will help Northwest utilities understand their positions in relation to the wholesale market and how the region relies on that market. By using simple analytical tools currently being developed by the Resource Adequacy Forum, utilities will be able to use the assessment to gauge how their level of reliance on the market compares to that of other utilities and to that of the Northwest as a whole. This will give utilities a sense of the price pressures that might develop in the market. By indicating how heavily the region as a whole is relying on short-term power purchases, the adequacy assessment will enable individual utilities to take corrective action—resource acquisitions, for example—if it looks as though price pressures might be stronger than anticipated.

Despite the regional electricity surplus, it remains important to continue developing new power generating and conservation resources. Because most of the surplus is made up of uncontracted power sold by independent producers, many Northwest utilities actually are short of power and will have to acquire resources. Thus, while no blackouts loom as the result of inadequate supply, the Council believes utilities must continue to acquire new power and conservation in order to ensure an efficient and economic long-term supply. 

Modeling As an Open-ended Exercise: A Footnote to the Fifth Power Plan

With the completion of its Fifth Power Plan two years ago, the Council developed a groundbreaking tool to assess risk. The recommended resource portfolio for the Northwest is based on a computer model that evaluates how different resource plans would perform in 750 20-year futures. To find the least-cost plan, each level of risk, however, requires the evaluation of thousands of such plans. Consequently, the model must typically perform a million 20-year studies, which it does in about a day. "We call it scenario analysis on steroids," says its creator Michael Schilmoeller, senior power system analyst.

Interest in the regional model is keen. It's unique in that it considers historical trends along with an enormous variety of scenarios. In other words, it evaluates a much wider array of circumstances, and even more significantly, according to Schilmoeller, it doesn't assume perfect foresight. Forecasts, says Schilmoeller, are not good at predicting the future. "We didn't want to make the mistake of assuming our forecasts are infallible," he says. "With the regional model, we don't do that."


Another way that the model distinguishes itself is in the way a resource plan can change to adapt to the future. "A military planner knows that troops have to be prepared to adapt to surprises, and different plans have different advantages and costs," he explains. "Similarly, different power generation resources provide different planning, construction, and operating flexibility at different costs. The model's choice of resources reflects these differences."

When the Council began work on the plan, Schilmoeller knew that in order to develop a plan that would provide the best odds of securing a least-cost, least-risk power supply, the Council would need to use a tool that could evaluate a vast number of different scenarios and information. But such a tool didn't exist.

"It's pretty difficult work," he says. "The industry has been trying to deal with risk in resource planning for at least the 35 years that I have been involved; but we don't have a common language and a consistent set of principles that everyone can use to describe and think about risk." As a result, each utility treats risk differently.

Perhaps more surprising is that the regional model is itself written by a computer model, called Olivia. Olivia permitted the Council to experiment with a number of different models to see which one did the best job of representing the region and its issues.

Since the release of the Fifth Power Plan, a number of different entities have expressed interest in the Olivia model: utilities, customer groups, commissions, consultants, and engineers. Because Olivia can write resource selection and risk management models tailored to the requirements of the user, it provides the flexibility to create models for any utility or energy customer, not just the Council's region. Work is still ongoing to make the model user-friendly, but eventually, says Schilmoeller, the Council hopes to offer classes on the model to those who would like to use it in their analyses. And while models are being developed along similar lines in different areas—conservation assessment, for example—in the realm of energy planning, no one else has been able to create a tool like Olivia.

The interest in the model means that people have confidence in the Council's approach to risk, particularly at a time when there is a good deal of uncertainty about future regulatory policy. In the end, as we all know, the future is unknown, and the wisest plan acknowledges it by building flexibility into its recommendations. As Schilmoeller views it, the model is simply more realistic: "It's just common sense." 

Northwest Q & A: Brian Lipscomb

Brian Lipscomb has been the executive director of the Columbia Basin Fish and Wildlife Authority since July 2005. The CBFWA represents the region's fish and wildlife managers for the tribes, state, and federal agencies. It is authorized to coordinate the efforts of its members to protect and enhance the fish and wildlife resources of the Columbia River Basin.

Prior to his position with CBFWA, Lipscomb was department head for the Confederated Salish and Kootenai Tribes' Tribal Lands Department; a division manager for Fish, Wildlife, Recreation and Conservation; and an engineer for the U.S. Forest Service.

A member of the Confederated Salish and Kootenai Tribes, Lipscomb has a degree in civil engineering from Montana State University. He and his wife have two sons, Ben, 20 attending college at Montana State University, and Taylor, 19, married and attending college with his wife at the University of Oregon.

What are the biggest challenges for fish and wildlife in the near future for the region?

I think the biggest challenge is to articulate the issues that face fish and wildlife mitigation and recovery across the region. It's a complicated picture with many dimensions to it, and in order for the public to be effectively engaged, we need to be able to deliver our message more clearly with regard to the status of populations across the region, and how our actions affect those populations from a mitigation and restoration standpoint

Where do you see CBFWA going in the next 5 to 10 years?

As the Columbia Basin Fish and Wildlife Authority, I believe we are the entity to help articulate that message for the agencies and tribes within this region,



especially as it pertains to the operation of the Federal Columbia River Power System (FCRPS). In order to do that, there are elements that need to be constructed; the status of the resource report that we put together in the last year is a good starting point for that. It has helped us to identify, and then start to address, issues within the Council's fish and wildlife program. If we get the information pulled together for the amendment process, it will help build a better program, and help us to communicate a clear message for both the public and policymakers across the basin.

What do you think are the most significant challenges to accomplishing our mutual goals for fish and wildlife?

If our mutual goals are to restore, mitigate, and enhance, I think the biggest challenge, first of all, is going to be making sure the public understands the ramifications of the decisions that are made, and how they will affect fish and wildlife. Having said that, more specifically, the choices the public faces across

the region are not always just how much to write the check for from the standpoint of paying for the fish and wildlife mitigation, but also in the day-to-day living of their lives, i.e., global warming, population growth, and resource use and development, beyond just the federal hydropower system. So I think that is the biggest challenge in front of us; getting people to understand that their day-to-day choices have consequences for fish and wildlife. Although they can't see them, they are felt by the resources across the region.

The Independent Scientific Advisory Board reports on climate change and population growth came out recently. What is the perspective of fish managers on these two issues?

I haven't had conversations with the agencies and tribes directly on those two issues yet. I know as a fish and wildlife manager before coming here, certainly we faced the pressures of population growth on a day-to-day basis—just people moving to rural areas, wanting to be near a creek or by the water, and have all of that stuff in their back yard. But at the same time, they have a great impact on those areas. So, as we see that happening across the Intermountain West, I think there will be more and more pressure on agencies and tribes to work with local land use entities, local governments that can control land use and planning to try and get sound land use and development regulations put in place that people can work with, and understand, and be part of. We need to help make those goals and objectives theirs, and not just the agencies and tribes that manage those resources.

What do you think are the most critical geographic areas for fish and wildlife in the basin?

I would say it would be the valleys that are so attractive to people and where so

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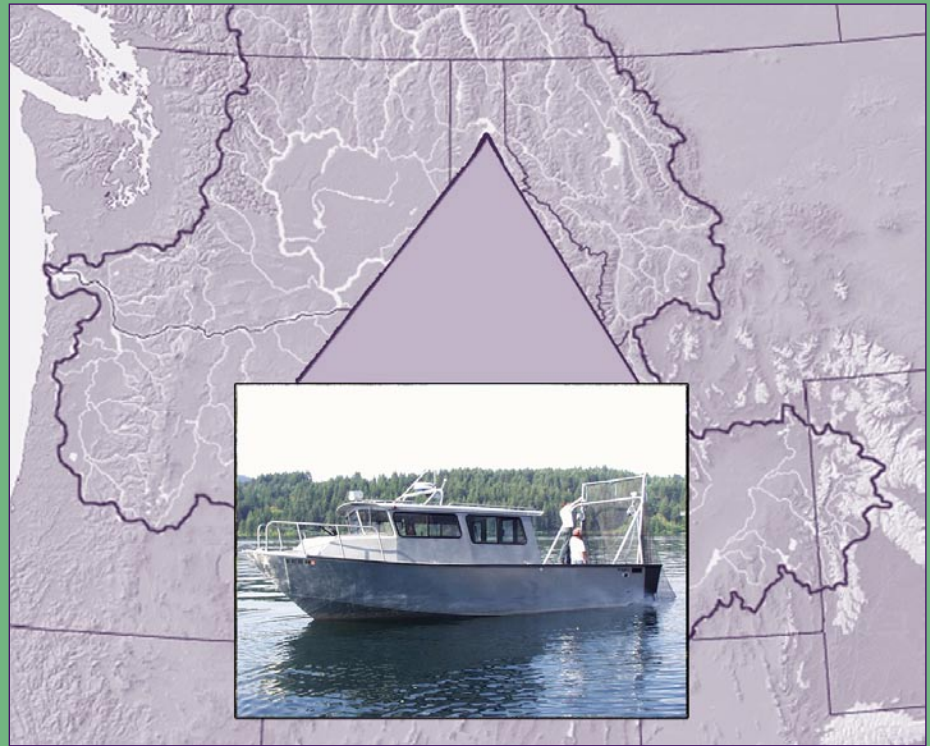
Success Stories – Lake Pend Oreille

Goal of project is to restore Lake Pend Oreille fishery

In northern Idaho's Lake Pend Oreille, the Idaho Department of Fish and Game is working to rebuild the declining kokanee population and restore a multi-million-dollar recreational fishery that has been damaged indirectly by the operation of Albeni Falls Dam. The work is being accomplished through the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program.

Lake Pend Oreille is a natural lake, but since the mid-1960s its level has been regulated by the federal hydro-power dam on the Pend Oreille River, which is the outlet of the lake. The dam holds the level of the lake higher in the summer than in the fall and winter, when the lake is drawn down for hydro-power production and for flood control. According to the Idaho Department of Fish and Game, over time the fall drawdowns greatly reduced the amount of spawning habitat for kokanee, a land-locked form of sockeye salmon that spawn in shallow water near the shore. Juvenile kokanee are the primary food of bull trout and rainbow trout. All three fish are important in the recreational fishery.

The project addresses four problems in the Lake Pend Oreille ecosystem: 1) reduced spawning habitat, and the resulting reduced abundance of kokanee, as the result of fluctuating lake levels from dam operations; 2) the resulting imbalance between predators (lake trout, rainbow trout, and bull trout) and prey (kokanee of all ages); 3) the lackluster performance of hatchery-bred kokanee, which have not boosted the overall kokanee population as anti-



pated; and 4) the increasing population of lake trout, which compete with bull trout for food in the lake ecosystem.

These problems are related. Lack of shoreline spawning area causes the kokanee decline, low kokanee abundance causes unbalanced predator/prey ratios, and this imbalance, over time, increases the threat that bull trout will be lost from the system and replaced by lake trout, a non-native species introduced to the lake in 1925. As the kokanee population declines, lake trout and bull trout compete for an increasingly limited food supply. Food competition also affects the trophy rainbow trout fishery, which constitutes most of the sport fishery on Lake Pend Oreille. A 2003 estimate placed the value of the fishery at \$17 million.


The Fish and Game Department is working to restore the bull trout population so that it is healthy enough to provide a harvest of 1,000 fish annually in the lake. This involves removing lake trout using trap nets and gillnets, and

examining the fall drawdown of the lake to see if it can be used to reduce the survival of lake trout eggs. The department also is working to reduce the abundance of rainbow trout until the kokanee population increases. Once kokanee are restored, the object will be to re-establish the trophy rainbow fishery.

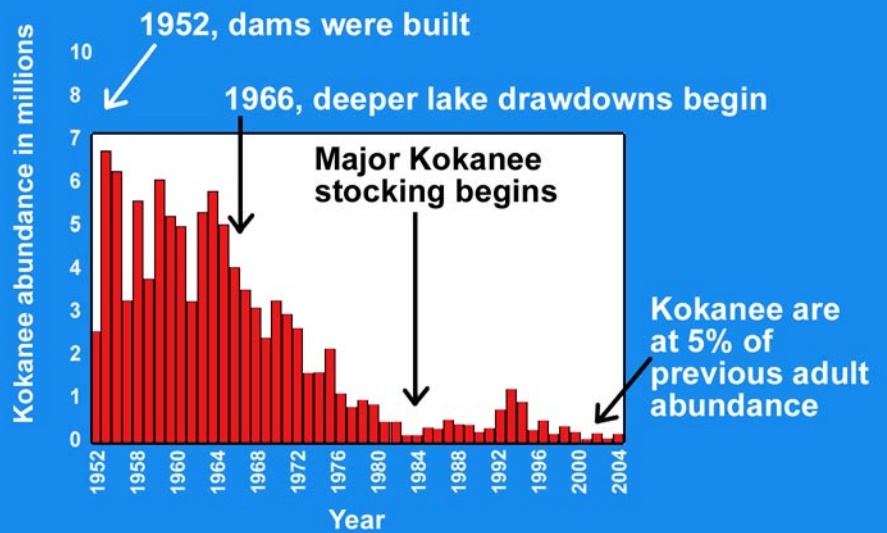
The current project dates to 1996, when the department began studying how lake levels affect kokanee spawning. The studies show a two-fold increase in kokanee egg-to-fry survival when lake levels are held higher during the winter following years when the lake was drawn down the maximum amount – 11 feet from full. Once kokanee begin spawning in mid-November it is also important to have no further drawdowns, the studies show. Even drawdowns of less than 3 feet can have noticeable effects on resulting fisheries if the drawdowns occur between mid-November and June, when kokanee

eggs are incubating. In short, good lake level management improves spawning habitat and protects the incubating kokanee eggs.

When the studies began, surveys of potential spawning areas around the lake found that an additional 1.8 million square feet of gravel would be available for kokanee spawning if the lake were held 4 feet higher than the normal low-pool level throughout the winter. The department later documented that when water levels were raised, kokanee readily spawned in new areas around the lake. Accordingly, changes to lake elevations are being designed that meet the demands of hydropower production at Albeni Falls Dam and also the needs of flood control, recreation, and the fish populations.

The fishery restoration suffered a setback in the spring of 2007 when demolition of four sets of old docks at the site of a marina development near the town of Bayview destroyed productive kokanee spawning beds and killed newly-hatched fish. Working with the Fish and Game Department, the developer who was responsible for the damage, and who was fined for negligence, prepared a restoration plan that will be submitted to state officials for approval. As part of the proposed plan, the developer hired a consultant to dredge silt from the site and clean the gravel where the fish spawn. The consultant will also help determine whether the spawning bed has been restored. In the meantime, the marina construction is halted. 

Adult Kokanee Abundance



Fish and Game Biologist Melo Maiolie holds a lake trout. The fish and game department is working to eradicate lake trout because they are predators of juvenile bull trout.

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many are moving into right now. When we look across the basin, we can see the hot spots where people are drawn. It's usually a nice valley with mountains on both sides with a stream running through it or a lake in the middle of it. Those places, I think, are going to be the most critical, because oftentimes they constitute either the spawning habitat itself, or access to spawning habitat. So, I think those are the most critical areas that we're going to need to keep an eye on as time progresses. As well as the system overall, we have to keep an eye on that as things go along, we can't let that slip through our fingers; concentrating on the detail and not seeing what is happening overall. We need to keep an eye on that.

How do you see the Council's subbasin plans fitting into these concerns? Will it make it easier for people to work together?

Yes, I think subbasin planning provided an evolutionary step forward in the organization of the program itself. It created a geographic context, and it has given us the ability to look—at a smaller scale—at resource management across the basin that is then articulated in the program. Not to say that it wasn't happening before, but the program wasn't organized in a way where you saw it reflected in the programmatic goals and objectives. Having that subbasin organizational structure is good. I think as we proceed forward there will be an opportunity for those subbasin plans to also be a catalyst for discussion across the region at those local areas, and as we progress there will be more and more opportunities to communicate and learn from the process. It will be an important tool to keep using.

What species do you think need special attention?

Of course, the listed species, and that includes resident fish and anadromous fish. There are some non-listed species

“So I think that is the biggest challenge in front of us; getting people to understand that their day-to-day choices have consequences for fish and wildlife.”

**Brian Lipscomb
Executive Director CBFWA**

that are very important and that are going to need attention: lamprey, westslope cutthroat trout. They need attention over the course of the next five to 10 years. And in doing that, of course, we can't lose sight of the species that are doing well. We can't focus our attention on the species that are doing badly to the detriment of the ones that are doing well. So, it's going to take a balanced approach, but we definitely need to be focusing on those species that are in dire need.

How do you see the Endangered Species Act and the Power Act fitting together?

The way I see it, the Power Act establishes that the Council's fish and wildlife program will reflect the goals and objectives of those agencies and tribes that have management responsibilities in the basin. The U.S. Fish and Wildlife Service and NOAA Fisheries both have management responsibility over listed anadromous and resident species that are affected by the FCRPS. So, the Council's program must recognize and take into account the goals and objectives of those entities as it pertains to those listed species. In the development of biological opinions for the operation of the FCRPS, I believe that's where those agencies will articulate their goals and objectives that the FCRPS

must meet in order to satisfy the ESA. Having said that, I think the Council's program should adopt, lock, stock, and barrel those biological opinions that are produced by those entities as it pertains to the FCRPS. So that's the direct tie. Indirectly, you also have recovery plans for listed species across the basin, both resident and anadromous, that will overlap as well, and so it's incumbent upon those agencies, and the other management agencies, states, and tribes that are involved with those recovery plans, to make sure those goals and objectives are reflected in the plans that are the basis for the Council's program. We'll be looking to make sure that happens from the agencies' and tribes' perspective as we try to bring forth amendments to the program over the course of the next few months.

How important is the relationship between the Council and CBFWA?

As much as CBFWA can provide a coordinated interaction between the agencies and tribes and the Council, I think that's where the value lies. The agencies and tribes have management authority over those resources, the Council has the obligation to put together a plan to mitigate the FCRPS's impacts on those resources, so the Act creates that relationship and it's up to CBFWA to help maintain that relationship as we progress forward through the amendment process, and then with the Council and Bonneville as that program gets implemented. The Council can't do it without the agencies and tribes, and the agencies and tribes can't get together and make this happen without the Power Act and the Council. And of course, Bonneville's implementation of it is integral as well; it's a three-legged stool that can't stand up if any part of it is missing.


Do you have a philosophy that you bring to your role at CBFWA?

Yes, I do. I definitely like to be proactive. I try to always approach the issue from

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the standpoint of always believing there is a solution; we just need to get the information pulled together to help folks in the region come to solutions that make sense. I try to bring my own tribal philosophy and work experience to bear in the sense that we're here for a short time, and we are here to assure that the resources are passed on to the next generation in a way that preserves their options to make decisions, just as we were able to do. It's that caretaker philosophy of the resources that

I believe needs to be front and center with regard to how these resources are utilized by society. It's definitely not a divide and conquer type of approach, but more of an understanding of nature's cycles, and working with those cycles  rather than

Council Decisions

Fiscal Year 2009 Budget and Fiscal Year 2008 Revisions

July

The Council adopted its draft Fiscal Year 2009 budget and the Fiscal Year 2008 revised budget. This budget reflects an increase of 2.1 percent from the Fiscal Year 2007 current operating budget. The increase represents inflationary increases in the cost of personal services and benefits. The Council adopts its budget in July or August and forwards it to the Bonneville Power Administration for inclusion in its budget transmittals to Congress. The fiscal year begins on October 1.

ISRP Appointments

July

The Council appointed Dr. Robert Bilby and Dr. John Epifanio to the Independent Scientific Review Panel. The ISRP is the Congressionally mandated panel of 11 independent scientists that reviews, with the assistance of a number of Peer Review Group scientists, projects proposed for implementation through the Council's Columbia River Basin Fish and Wildlife Program. Dr. Bilby is an ecologist at the Weyerhaeuser Company and an expert in riparian ecology. Dr. Epifanio directs the Center for Aquatic Ecology at the Illinois Natural History Survey. Both terms—Epifanio's is a renewal—are for three years.

History Now
The earliest explorers of the
Columbia River
envisioned it as a river
of commerce,
originally for purposes
of the fur trade.
It was American fur merchant
Robert Gray
who discovered
the Columbia in 1792,
and commercial ships were plying the
Columbia regularly by the 1820s to
supply trading posts
on the lower river.



Captain Robert Gray at the mouth of the Columbia River in 1792 (Oregon State Capitol mural)

To learn more about Columbia River history,
visit the Council's Columbia River History Project website,
www.nwcouncil.org/history.

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